APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/489,846	01/24/2000	Hideya Takeo	Q56532	6337

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EXAMINER
MILLER, RYAN J

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 09/10/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/489,846	TAKEO, HIDEYA
	Examiner	Art Unit
	Ryan J. Miller	2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *06 August 2003* .

2a) ☐ This action is **FINAL**.　　2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-5,7 and 9-17* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-5,7 and 9-17* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *24 January 2000* is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

　　If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a) ☒ All b) ☐ Some * c) ☐ None of:

　　　　1. ☒ Certified copies of the priority documents have been received.

　　　　2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

　　　　3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
　　　　application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

　　a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) ☐ Notice of Informal Patent Application (PTO-152)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) ☐ Other: .

DETAILED ACTION

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114. Applicant's submission filed on August 6, 2003 has been entered.

Claim Objections

2.   The following quotations of 37 CFR § 1.75(a) and (d)(1) are the basis of objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention or discovery.

3.   Claims 1-5, 7, and 9-17 are objected to under 37 CFR § 1.75 as failing to particularly

point out and distinctly claim the subject matter which the applicant regards as his invention or

discovery.

Regarding claim 1, the claim language, "relating a result of the processed abnormal

pattern to a result of the corrected abnormal pattern" is unclear and difficult to understand even

in light of the disclosure. What is meant by "relating"? Is the system correlating the results? Or,

is some type of statistical relation determined between the two results?

Regarding claims 3, 5, and 7, each of these claims contains a similar limitation and is,

therefore, objected on a similar basis.

Claims 5 and 7 are further objected to for reciting the limitation, "said memory means" at

line 9 and line 11, respectively. There is insufficient antecedent basis for this limitation in the

claims.

Regarding claims 16 and 17, these claims recite the limitation, "An abnormal pattern detection processing method". There is insufficient antecedent basis for this limitation in the claims.

Claims 2, 4, and 9-17 are objected to as depending from objected to claims.

Clarification of this issue is requested.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5.   Claims 1-5, 7, and 9-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Rogers et al. (U.S. Patent Application Publication No. US 2002/0081006 A1).

As applied to claim 1, Rogers et al. discloses an abnormal pattern detection processing method comprising: detecting an abnormal pattern in an image, based on inputted image information (see paragraph [0042]: The reference describes detecting microcalcifications (i.e. abnormal pattern) in a digital mammogram.); processing the detected abnormal pattern (see paragraph [0042]: The reference describes filtering the image to reduce noise and then filtering the image using an optimized difference of Gaussians (DoG) filter to enhance the microcalcifications. These first two steps correspond to determining a second set of suspicious detections, S2, described in paragraph [0014].); correcting the processed abnormal pattern, for each of a plurality of items of the inputted image information (see paragraph [0014]: The

reference describes that a radiologist examines the suspicious detections of the CAD system and either rejects or accepts them (i.e. correcting the processed abnormal pattern).); relating a result of the processed abnormal pattern to a result of the corrected abnormal pattern, for each of the plurality of items of the inputted image information (see paragraph [0014]: The reference describes that the CAD system outputs, S2, are incorporated with the radiologist's analysis to optimize the overall sensitivity of detecting true positives. This incorporation is a manner of relating the result of the processed abnormal pattern to a result of the corrected abnormal pattern and achieves the goal of optimizes the overall sensitivity of the system.); and storing the plurality of processed abnormal pattern results and the plurality of corrected abnormal pattern results (see paragraph [0046]: The reference describes that the digital images are stored on a computer-readable storage medium.).

As applied to claim 2, Rogers et al. discloses that quantitative evaluation of the detection processing is performed, on the basis of the stored plurality of processed abnormal pattern results and the stored plurality of corrected abnormal pattern results (see paragraphs [0014] and [0137]: The quantitative evaluation the relating described above. The CAD system outputs are incorporated with the radiologist's analysis to optimize the overall sensitivity of detecting true positives. Further quantitative evaluations such as specificity and the positive predictive value are also determined from this data.).

As applied to claim 3, Rogers et al. discloses an abnormal pattern detection processing method comprising: detecting an abnormal pattern in an image, based on inputted image information (As described in the rejection of claim 1.); processing the detected abnormal pattern (As described in the rejection of claim 1.); performing a pattern reading assessment using the

image information (see paragraph [0014]: The reference describes that a radiologist examines the

suspicious detections of the CAD system and either rejects or accepts them, thus forming a third

set of suspicious detections S3.); performing a pathologic assessment of the abnormal pattern

(see paragraph [0014]: The reference describes that a radiologist reviews the image and reports a

set of suspicious regions, S1 (i.e. a pathologic assessment of the abnormal pattern).); relating a

result of the detected abnormal pattern processing and a result of the pattern reading assessment

to a result of the pathologic assessment, for each of a plurality of items of the inputted image

information (As described in the rejection of claim 1.); and storing the plurality of processed

detected abnormal pattern results, the plurality of pattern reading assessment results and the

plurality of pathologic assessment results (As described in the rejection of claim 1.).

As applied to claim 4, Rogers et al. discloses that a quantitative evaluation of the pattern

reading assessment is performed, on the basis of the stored plurality of pattern reading

assessment results and the stored plurality of pathologic assessment results (As described in the

rejection of claim 2).

As applied to claim 5, Rogers et al. discloses an abnormal pattern detection processing

system, which detects (see Fig. 1: Block 300 which represents detecting clustered

microcalcifications.) and processes an abnormal pattern (see Fig. 1: Block 600 which represents

processing the results) in an image represented by image information on the basis of inputted

image information, comprising: a means relating a result of the detection processing to a

corrected detection processing result, for each of a plurality of items of image information (see

Fig. 31: The combination of blocks 50 through 70 depict that the CAD system outputs, S2, are

incorporated with the radiologist's analysis to optimize the overall sensitivity of detecting true

positives.), and storing the plurality of detection processing results and the plurality of corrected

detection processing results (see paragraph [0046]: The reference describes the use of a 2 GB

hard drive of a general-purpose computer for storing information); and evaluator means for

performing quantitative evaluation of the detection processing on the basis of the plurality of

results of detection processing and corrected detection processing results stored in the memory

means (This evaluation is the same evaluation as described in the rejection of claim 2. Since the

reference describes a computerized system (see paragraph [0046]), then the computers processor

acts as the evaluator means.)

As applied to claim 7, Rogers et al. discloses an abnormal pattern detection processing

system, which detects and processes an abnormal pattern in an image represented by image

information on the basis of inputted image information (As described in the rejection of claim 5

above.), comprising: a means relating a result of the detection processing and a result of a pattern

reading assessment using the image information to a result of pathologic assessment concerning

the abnormal pattern, for each of a plurality of items of the image information (As described in

the rejection of claim 5 above), and storing the plurality of detection processing results, the

plurality of pattern reading assessment results and the plurality of pathologic assessment results

(As described in the rejection of claim 5 above.); and evaluator means for performing a

quantitative evaluation of the pattern reading assessment on the basis of said plurality of pattern

reading assessment results and the plurality of pathologic assessment results stored in said

memory means (This evaluation is the same evaluation as described in the rejection of claims 2

and 5. Since the reference describes a computerized system (see paragraph [0046]), then the

computers processor acts as the evaluator means.).

As applied to claim 9, Rogers et al. discloses that the corrected abnormal pattern results comprise a determination of whether the processed abnormal pattern corresponds to at least one of a true positive, false positive, true negative and false negative (see paragraph [0137]: The reference describes the use of true positive, false positive, true negative and false negative to rate the detected clusters.).

As applied to claim 10, Rogers et al. discloses that quantitative evaluation comprises a ratio of a number of true results relative to a number of true and false results (see equations (11), (12), and (13): These equations represent sensitivity, specificity, and positive predictive value (PPV), respectively, which are all a ratio of a number of true results relative to a number of true and false results.

As applied to claim 11, Rogers et al. discloses that a sensitivity of the quantitative evaluation is determined by the ratio of true positives to a sum of true positives and false negatives (see equation (11), following paragraph [0133]).

As applied to claim 12, Rogers et al. discloses a specificity of the quantitative evaluation is determined by the ratio of true negatives to a sum of true negatives and false positives (see equation (12), following paragraph [0134]).

As applied to claim 13, Rogers et al. discloses a positive predictive value of the quantitative evaluation is determined by the ratio of true positives to a sum of true positives and false negatives (see equation (13), following paragraph [0138]).

As applied to claim 14, which is representative of claims 15-17, Rogers et al. discloses that the processing automatically determines whether the abnormal pattern exists or not based on a result of the detection (see paragraph [0042]: As described in the rejection of claim 1 above,

the reference describes filtering the image to reduce noise and then filtering the image using an optimized difference of Gaussians (DoG) filter to enhance the microcalcifications. These first two steps correspond to determining a second set of suspicious detections, S2, described in paragraph [0014]. These processing steps are performed by the CAD system and are performed automatically. The processing steps determine a set of suspicious detections, which corresponds to determining whether the abnormal pattern exists or not.).
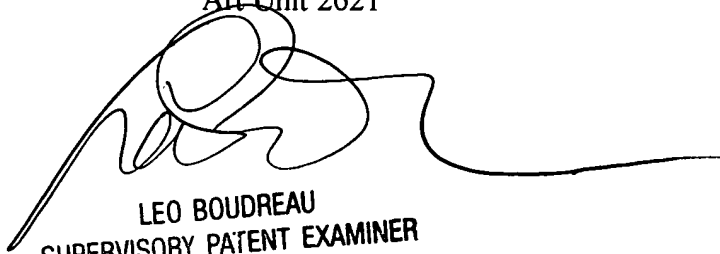
Conclusion

6.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan J. Miller whose telephone number is (703) 306-4142. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.

Ryan J. Miller
Examiner
Art Unit 2621

Ryan J. Miller

LEO BOUDREAU
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